NON-PUBLIC?: N
ACCESSION #: 8907050105
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Davis-Besse Unit No. 1 PAGE: 1 OF 3

DOCKET NUMBER: 05000346

TITLE: Reactor Trip From Full Power Due To Main Turbine Trip On Loss Of Vacuum
EVENT DATE: 05/30/89 LER #: 89-005-00 REPORT DATE: 06/29/89

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPOR
IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION 50.73(a)(2)(ii)

LICENSEE CONTACT FOR THIS LER:
NAME: Jan C. Stotz, Engineer - Maintenance Planning TELEPHONE: 419 249-5000

COMPONENT FAILURE DESCRIPTION:
CAUSE: A SYSTEM: EA COMPONENT: SPLC MANUFACTURER:
REPORTABLE TO NPRDS: N

SUPPLEMENTAL REPORT EXPECTED: no

ABSTRACT:

On May 30, 1989, Davis-Besse experienced a reactor trip from 100 percent power. The event began as a trip of the main turbine due to loss of condenser vacuum when the Circulating Water (CW) Pumps 2 and 4 tripped on high phase differential current. The post-trip response of the plant was good. The cause of the high differential current was in a failed splice in one phase of a 13.8KV feeder cable which was sensed by the protective relaying for the Cw pumps. The failed splice was removed for determination of cause. The failure of the splice was determined to be caused by improper installation.

With the faulty load cable isolated from the 13.8KV bus, the Plant was restarted and brought back on line by 1530 hours on May 31, 1989.

END OF ABSTRACT

TEXT PAGE 2 OF 3

Description of Occurrence:

On May 30, 1989, Davis-Besse was operating at 100 percent power with all Integrated Control System (ICS) (JA) stations in automatic control. At 1414 hours, Circulating Water (KE) Pumps 2 and 4 tripped on high phase differential current. When the Circulating Water Pumps tripped, flow in both Circulating Water Loops substantially decreased. As a result, condenser pressure quickly began to increase. Approximately one minute later, condenser pressure reached the setpoint at which an automatic main turbine trip occurs. An Anticipatory Reactor Trip System (ARTS) actuation on the turbine trip occurred at 1415 hours. The ARTS actuation tripped the Control Rod Drive (CRD) (AA) Breakers.

The post-trip response of the plant was good. All parameters stabilized within their normal post-trip values. One Main Steam Safety Valve (MSSV), SP17B7, was slow in reseating which required a reduction in turbine header pressure to about 970 psig to reseat.

The reactor trip was reported to the NRC at 1617 hours in accordance with the four-hour reporting requirement of 10CFR50.72(b)(2)(ii).

This report is being submitted as an LER under 10CFR50.73(a)(2)(iv).

Apparent Cause of Occurrence:

The cause of the trip was a reduction in condenser vacuum which occurred when the two Circulating Water Pumps tripped. The Circulating Water Pumps tripped when an electrical fault occurred at a splice in a cable feed for BF4, a 480V transformer. BF4 is powered from the 13.8KV "B" Bus which also powers Circulating Water Pumps 2 and 4. The fault and subsequent burning of the cable insulation created a high resistance short circuit to ground in one of the phases feeding the transformer. This short circuit caused the motor surge capacitor within the motor Differential Relay Zone for the Circulating Water Pumps breakers to repeatedly charge and discharge. The successive charging and discharging of the capacitors caused sufficient current to flow which unbalanced the SA-1 differential, and subsequently actuated the SA-1 relays. Approximately five minutes after the fault occurred, a phase-to-ground condition of sufficient magnitude occurred at the splice which opened transformer BF4 feed and load breakers. The splice had been installed in March 1989 under MWO 1-88-2678-01.

The cause of this fault at the splice was investigated. The section of the splice removed and examined. The cause was determined to be improper installation of the cable splice where proper dimensional requirements for removal of the different layers of cable material were not maintained.

Analysis of Occurrence:

There were no safety concerns identified during this transient. ARTS functioned properly to open the control rod drive breakers when the main turbine tripped. The Reactor Protection System (RPS) (JC) functioned properly to trip on low pressure during the normal post-trip Reactor Coolant System pressure decrease. The Safety Features Actuation System (SFAS) (JE) and Steam and Feedwater Rupture Control System (SFRCS) (JB) were not challenged during this event.

Corrective Action:

Maintenance personnel who perform this type of work have reviewed this incident as a reminder of how critical the attention to detail is for high voltage splices.

Under Maintenance Work Order (MWO) 1-89-1058-00, work has begun to replace the faulted 13.8KV cable. The replacement is expected to be completed by July 14, 1989.

Failure Data:

This is the first reactor trip that was initiated from an equipment failure on the secondary side of the plant since LER 87-011 when a feedwater flow transmitter failed.

REPORT NO. NP33-89-007 PCAQ 89-0289

ATTACHMENT 1 TO 8907050105 PAGE 1 OF 1

TOLEDO
Edison

June 29, 1989

Log No.: KA89-40015
NP-33-89-007

Docket No. 50-346
License No. NPF-3

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Gentlemen:

LER No. 89-005
Davis-Besse Nuclear Power Station, Unit No. 1
Date of Occurrence - May 30, 1989

Enclosed is Licensee Event Report 89-005, which is being submitted in accordance with 10 CFR 50.73(a)(2)(iv) to provide 30 days written notification of the subject occurrence.

Yours truly,

Louis F. Storz
Plant Manager
Davis-Besse Nuclear Power Station

LFS/plg

Enclosure

cc: Mr. A. Bert Davis
Regional Administrator
USNRC Region III

Mr. Paul Byron DB-1 NRC Sr. Resident Inspector

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